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FIRST RECORDS AND COMPARATIVE NOTES OF TWELVE APHIDIID SPECIES (HYMENOPTERA, APHIDIIDAE) FROM THE FAUNA OF UKRAINE

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First Records and Comparative Notes of Twelve Aphidiid Species (Hymenoptera, Aphidiidae) from the Fauna of Ukraine. Kaliuzhna, M. O. — Twelve aphidiid species are recorded from the fauna of Ukraine for the first time. Localities, hosts, distribution, and comparative notes on morphology of these species are given.

Key words: aphidiids, aphids, parasitoids, Aphidiidae, Ukraine, first records.

Первые находки и сравнительная характеристика двенадцати видов наездников-афидиид (Hymenoptera, Aphidiidae) фауны Украины. Калюжная М. А. — Впервые для фауны Украины указаны 12 видов наездников-афидиид. Дана информация о местах находок, хозяевах и распространении этих видов, а также дифференциальный диагноз для каждого вида.

Ключевые слова: афидииды, тли, паразиты, Aphidiidae, Украина, первые находки.

Introduction

Aphidiidae is a family of ichneumonoid wasps, which are specialized solitary endoparasitoids of aphids (Tobias, Chiriac, 1986; Davidian, 2007). Today near 700 species belonging to more than 60 genera have been identified worldwide (Yu et al., 2012). Aphidiids regulate aphids' population growth in natural ecosystems and in agricultural landscapes; some species are successful agents of biological pest control (Starý, 1970). Nevertheless, data on aphidiids in Ukraine is yet scarce and material examination brings new interesting findings.

Material and methods

Material from collections of Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine (SIZK) and Zoological Institute of Russian Academy of Sciences (ZISP) was studied. Material was collected mostly by sweeping; a few specimens were reared from infested aphid mummies. Morphological features of species were examined under Leica M165 C microscope with mounted camera Leica DFC450 C, partly on slides in Canadian balsam under Olympus CX41 microscope with mounted camera Olympus C3040, and partly using the Scanning Electron Microscopy (JEOL JSM-6480LV) in the Royal Museum for Central Africa (Tervuren, Belgium). All photos were processed in GIMP 2.8.8.; for creating extended depth of images, some photos were processed in CombineZP. Drawings were made from mounted slide (for *Ephedrus cerasicola*) and from dry specimen (for *Paralipsis enervis*). Morphological terminology for parasitoids is following U. Gärdenfors (1986), and Sharkey and Wharton (1997). Coordinates of localities were found in Google Earth.

Results

Twelve aphidiid species are reported from the fauna of Ukraine for the first time. Data on each species include information about synonyms, material examined, hosts, habitats, distribution, and comparative notes on morphology.

Adialytus salicaphis (Fitch, 1855)

Material. 1 ♀, Kyiv Region, Borodianka Distr., near rail station "Spartak" [50°40'29.21" N, 29°44'21.92" E], plot of felled forest, 14.05.2003 (E. Simutnik) (SIZK).

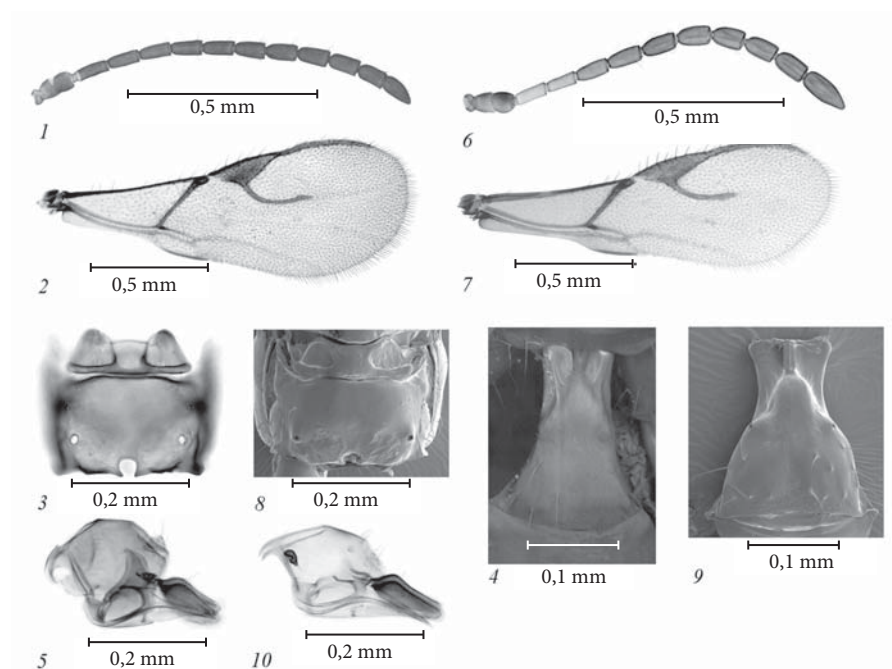


Fig. 1. *Adialytus salicaphis*, ♀ (1–5) and *A. ambiguus*, ♀ (6–10): 1, 6 — antenna; 2, 7 — forewing; 3, 8 — propodeum; 4, 9 — petiole; 5, 10 — ovipositor sheath.

Рис. 1. *Adialytus salicaphis*, ♀ (1–5) и *A. ambiguus*, ♀ (6–10): 1, 6 — усик; 2, 7 — переднее крыло; 3, 8 — проподеум; 4, 9 — стелек; 5, 10 — створки яйцеклада.

Comparative notes. Morphologically *A. salicaphis* (fig. 1, 1–5) is similar to *A. ambiguus* (Haliday) (fig. 1, 6–10), differing by: 1) antenna less thickened at apex, with preapical and apical flagellomeres not fused; 2) flagellomere 1 (F1) with longitudinal placodes; 3) wider fore wings: 2.7 times as long as wide; 4) propodeum without carinae; 5) more slender petiole; 6) brown abdomen and antenna; 7) less thin and sharp ovipositor sheath; 8) host range.

Hosts. Mostly species of *Chaitophorus* genus on *Salix* and *Populus*: *Chaitophorus capreae*, *C. euphraticus*, *C. horii beuthani*, *C. kapuri*, *C. leucomelas*, *C. matsumurai*, *C. melanosiphon*, *C. nassonowi*, *C. pakistanicus*, *C. populeti*, *C. populialbae*, *C. populicola*, *C. populicola patchae*, *C. populifolii*, *C. remaudieri*, *C. remaudieri*, *C. saliciti*, *C. salijaponicus*, *C. salijaponicus niger*, *C. saliniger*, *C. tremulae*, *C. truncates*, *C. utahensis*, *C. viminalis*, *C. vitellinae* (Starý, 1976, 2006; Tobias, Chiriac, 1986; Davidian, 2007; Starý, Lukáš, 2009; Tomanović et al., 2006 a; Yu et al., 2012). Also known a few data about *A. salicaphis* parasitizing on *Aphis* spp., *Cryptomyzus ribis* and *Periphyllus* sp. (Yu et al., 2012).

Habitats. Mixed forests (Starý, Lukáš, 2009), gardens (Starý, 2006). Associated mostly with habitats with deciduous trees, and less with shrubs and grasses (Yu et al., 2012).

Distribution. Ukraine (Kyiv Region, first record). Europe; Asia (except South-Eastern Region); North America (Davidian, 2007; Tobias, Chiriac, 1986; Starý, 1976, 2006; Starý, Lukáš, 2009; Yu et al., 2012).

Aphidius megourae Starý, 1965

Material. 1 ♀, Kyiv, Feofania [50°20'35.36" N, 30°27'53.06" E], forest (edges and glades), 22.06.2007 (A. Kotenko) (SIZK).

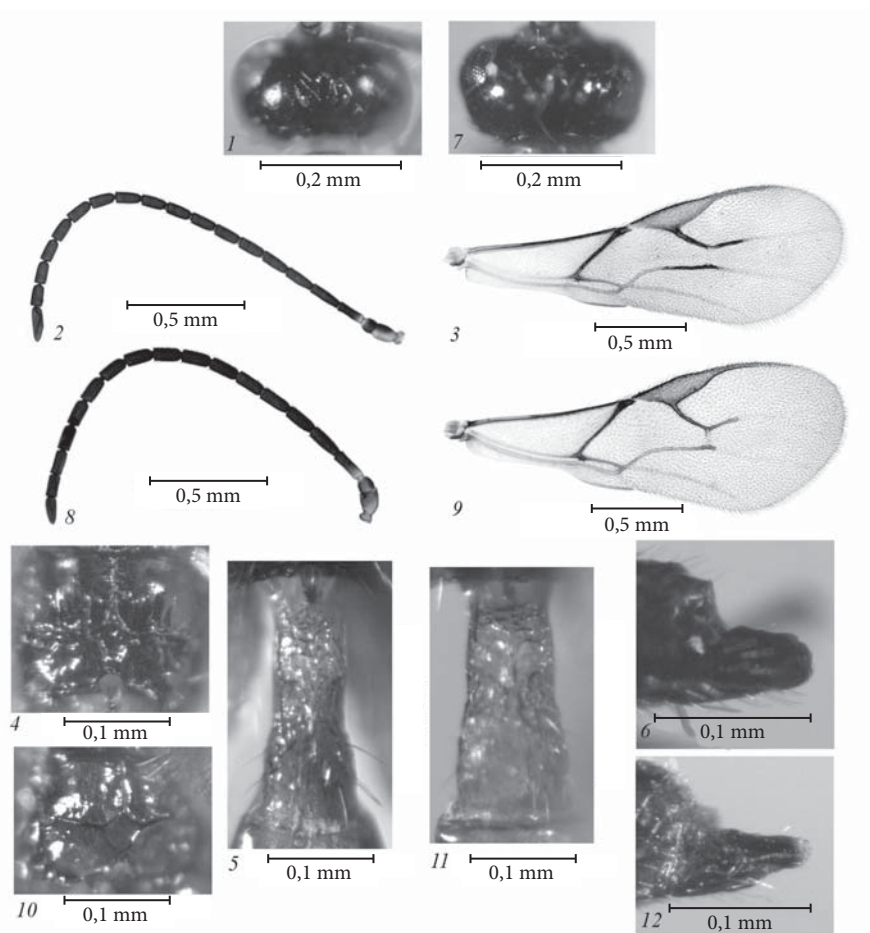


Fig. 2. *Aphidius megourae*, ♀ (1–6) and *A. funebris*, ♀ (7–12): 1, 7 — head, dorsal aspect; 2, 8 — antenna; 3, 9 — forewing; 4, 10 — propodeum; 5, 11 — petiole; 6, 12 — ovipositor sheath.

Рис. 2. *Aphidius megourae*, ♀ (1–6) и *A. funebris*, ♀ (7–12): 1, 7 — голова, вид сверху; 2, 8 — усик; 3, 9 — переднее крыло; 4, 10 — проподеум; 5, 11 — стебелёк; 6, 12 — створки яйцеклада.

Comparative notes. *A. megourae* belongs to the group of *Aphidius* species with tentorial index 0.5–0.6 (Starý, 1973). *A. megourae* (fig. 2, 1–6) is similar to *A. funebris* Mackauer (fig 2, 7–12), from which it differs by: 1) more convex temples; 2) antenna with 19–20 segments; 3) narrower and longer central cell (fused 1st discal, 1st and 2nd sub-marginal cells) of forewing; 4) narrower areola on propodeum; 5) more elongated petiole: 3.6–3.8 times as long as wide at spiracles level; 6) ovipositor sheath less sharp and almost not thinned at apex; 7) host range.

Hosts. *Megoura viciae* on *Lathyrus pratensis* and *Vicia cracca* is the main host (Starý, 1965, 2006; Tobias, Chiriach, 1986; Yu et al., 2012). For a long time *A. megourae* considered being monophagous, but now there are information about its parasitizing on *Acyrtosiphon pisum*, *Aphis craccivora*, and *A. fabae* (Yu et al., 2012).

Habitats. Wet meadows, clearings in woods and in pathways (Starý, 1965), pasture meadows, roadsides (Starý, 2006), mixed forests: edges and glades.

Distribution. Ukraine (Kyiv Region, first record). Europe: France, Poland, Czech Republic, Slovakia, Hungary, Moldova, Russia (Moscow Region) (Tobias, Chiriach, 1986; Yu et al., 2012).

Areopraon silvestre (Starý, 1971)

Material. 1 ♀, Donetsk Region, Slaviansk Distr., Bogorodichnoe [49°01'8.28" N, 37°30'11.43" E], glades on chalky slopes, 17.07.1982 (A. Kotenko) (SIZK); 1 ♀, Kyiv Region, Borodianka Distr., rail station "Spartak" [50°40'29.21" N, 29°44'21.92" E], deciduous forest, Tal riverside, sweeping on motley grass, 10.07.1977 (A. Kotenko) (SIZK).

Comment. Only one species of the genus *Areopraon* is registered in Ukraine. Five species are presented in European fauna (Yu et al., 2012).

Comparative notes. From other European species of the genus *A. silvestre* differs by (Tomanović et al., 2006 b): 1) 19–20-segmented (rarely 17-, 18-, 21-segmented) antenna; 2) F1 4.0–4.5 times as long as median width; 3) stigma is 3.0–3.5 times as long as wide; 4) petiole 1.2–1.5 times as long as wide at spiracles level. Ukrainian specimens of *A. silvestre* (fig. 3, 1–6) with 18–19-segmented antenna, F1 4.3 times as long as median width, stigma is 3.3–3.5 times as long as wide, petiole 1.2–1.3 times as long as wide at spiracles level. *Areopraon* species may be confused with species of the genus *Praon* (fig. 3, 7–12). *A. silvestre* clearly differs from *Praon* species in: 1) carinated propodeum; 2) subquadrate petiole; 3) sharper and more densely pubescent ovipositor sheath without conical spines on the apex.

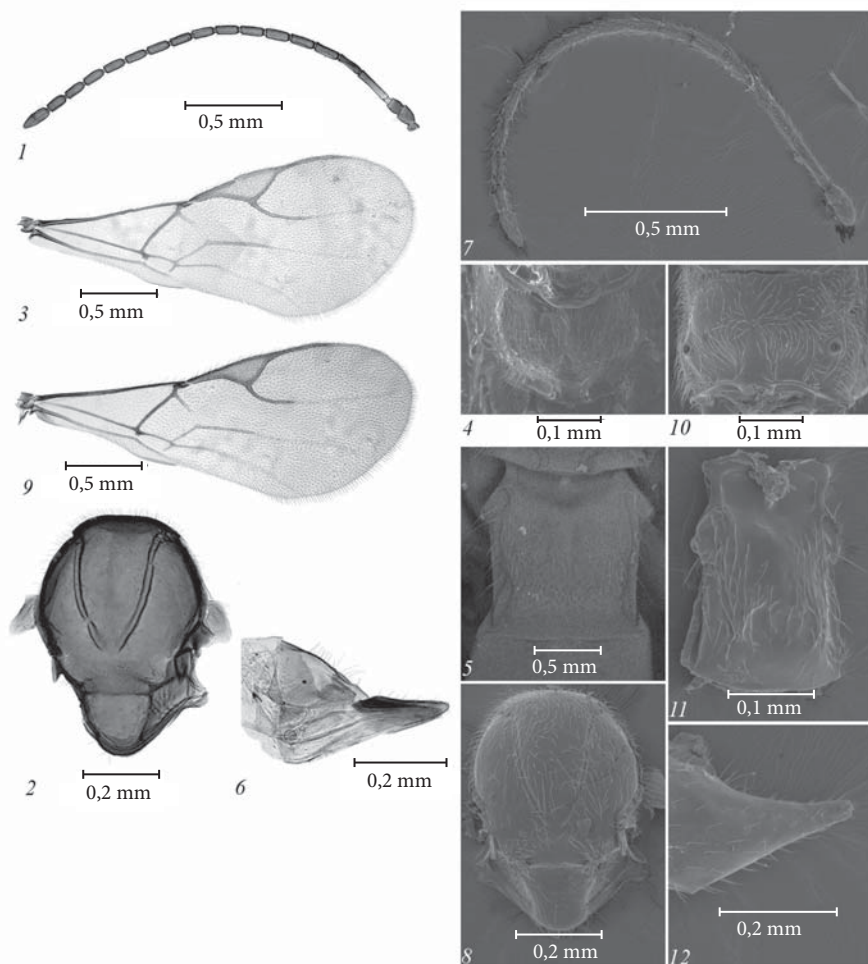


Fig. 3. *Areopraon silvestre*, ♀ (1–6) and *Praon volucre*, ♀ (7–12): 1, 7 — antenna; 2, 8 — mesonotum; 3, 9 — forewing; 4, 10 — propodeum; 5, 11 — petiole; 6, 12 — ovipositor sheath.

Рис. 3. *Areopraon silvestre*, ♀ (1–6) и *Praon volucre*, ♀ (7–12): 1, 7 — усик; 2, 8 — среднеспинка; 3, 9 — переднее крыло; 4, 10 — проподеум; 5, 11 — стебелёк; 6, 12 — створки яйцеклада.

Hosts. Species of *Periphyllus* genus: *Periphyllus acericola* on *Acer platanoides*, *A. pseudoplatanus*; *P. aceris* on *Acer opalus*, *A. platanoides*; *P. hirticornis* on *Acer campestre*, *A. opalus*; *P. testudinaceus* on *Acer campestre*, *A. platanoides*, *A. pseudoplatanus*, *Acer* sp.; *Periphyllus* sp. on *Acer campestre*, *A. platanoides*, *A. pseudoplatanus* (Starý, 1971, 2006; Tomanović et al., 2006 b; Starý, Lukáš, 2009; Yu et al., 2012).

Habitats. Mixed forests (Starý, 2006; Starý, Lukáš, 2009), deciduous forests, parks (Starý, 2006), glades on chalky slopes, riversides.

Distribution. Ukraine (Donetsk and Kyiv Regions, first records). Europe: France, Switzerland, Germany, Norway, Finland, Serbia, Bulgaria, Czech Republic, Slovakia (Starý, 2006; Starý, Lukáš, 2009; Yu et al., 2012).

Diaeretus leucopterus (Haliday, 1834)

Material. 1 ♀, Kyiv Region, Borodianka Distr., near Klavdievo [50°35'15.01" N, 29°59'56.49" E], sweeping in the forest (*Betula*, *Pinus*) and on fern in a swamp, 23.05.1976 (A. Kotenko) (SIZK).

Comment. Three species of the genus *Diaeretus* are known worldwide, and *D. leucopterus* is the only one species present in the Palearctic Region (Yu et al., 2012).

Comparative notes. *D. leucopterus* (fig. 4) morphologically is similar to species from monotypic genus *Diaeretiella* — *D. rapae* M'Intosh, from which it differs by: 1) antenna with 16–18 segments; 2) mesoscutum without notauli; 3) shorter radial vein of forewing; its length equal to stigma width; 4) propodeum with transverse carina and without central areola; 5) petiole with slightly visible longitudinal tubercle and without central carina; 6) almost square ovipositor sheath, not thinned to the apex; 7) form of the apex of ovipositor sheath.

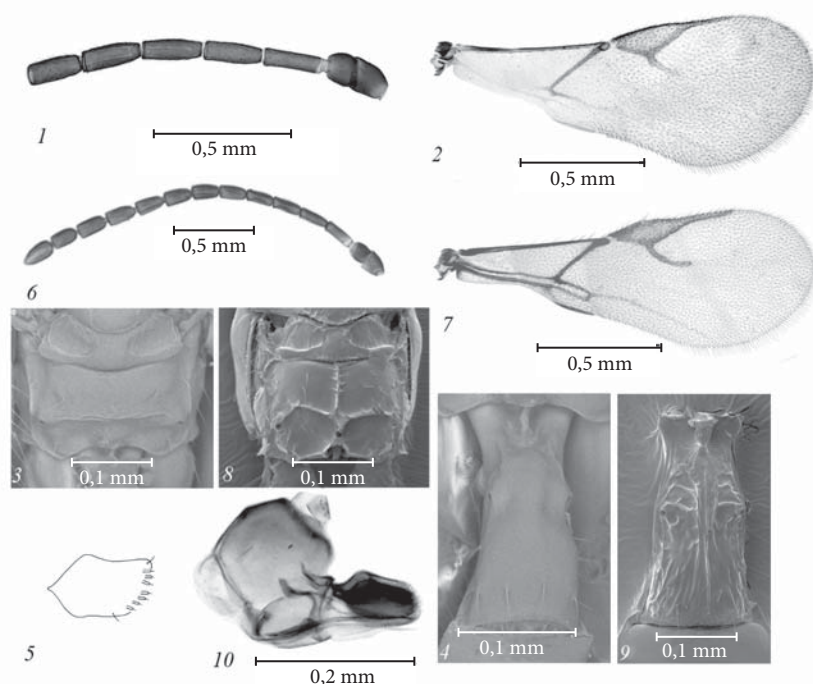


Fig. 4. *Diaeretus leucopterus*, ♀ (1–5) and *Diaeretiella rapae*, ♀ (6–10): 1, 6 — antenna; 2, 7 — forewing; 3, 8 — propodeum; 4, 9 — petiole; 5, 10 — ovipositor sheath (5 — after Takada, 1968).

Рис. 4. *Diaeretus leucopterus*, ♀ (1–5) и *Diaeretiella rapae*, ♀ (6–10): 1, 6 — усик; 2, 7 — переднее крыло; 3, 8 — пропodeум; 4, 9 — стелёк; 5, 10 — створки яйцеклада (5 — по: Takada, 1968).

Hosts. Species of *Eulachnus* genus on *Pinus* are the main hosts: *E. agilis*, *E. mediterraneus*, *E. rileyi*, *E. thunbergii*, *E. tuberculostemmatum* (Starý, 1976, 2006; Tobias, Chiriac, 1986; Davidian, 2007; Starý, Lukáš, 2009; Yu et al., 2012). In addition, there is an information about *D. leucopterus* parasitizing on *Cinara piniformosana* and *Schizolachnus pineti* on *Pinus*, and on *Mindarus abietinus* associated with coniferous trees. *Brachycaudus cardui* and *Schizaphis graminum* are also mentioned as host species, but these data have not been confirmed in latest publications (Yu et al., 2012).

Habitats. Mixed forests, pine forests, coniferous forests edges, parks (Starý, 2006).

Distribution. Ukraine (Kyiv Region, first record). Europe (except North Europe), Near East (Israel), Asia: Central (Uzbekistan, Tajikistan), Eastern (China, South Korea, Japan), Southern (India), and South-Eastern (Thailand) (Tobias, Chiriac, 1986; Davidian, 2007; Yu et al., 2012).

Ephedrus cerasicola Starý, 1962

Material. 1 ♂, 2 ♀, Kyiv, Darnytsia [50°25'20.98" N, 30°40'12.49" E], 19.05.2010, reared from aphids on apple-tree 25–31.05.2010 (Fursova) (SIŽK).

Comparative notes. *E. cerasicola* (fig. 5, 1–6) differs from other *Ephedrus* species by the mesoscutum slightly wider than long (fig. 5, 2, 8); from *E. plagiator* (fig. 5, 7, 10–12) it differs by: 1) length ratio of F1/F2 is bigger and equals 1.2–1.3;

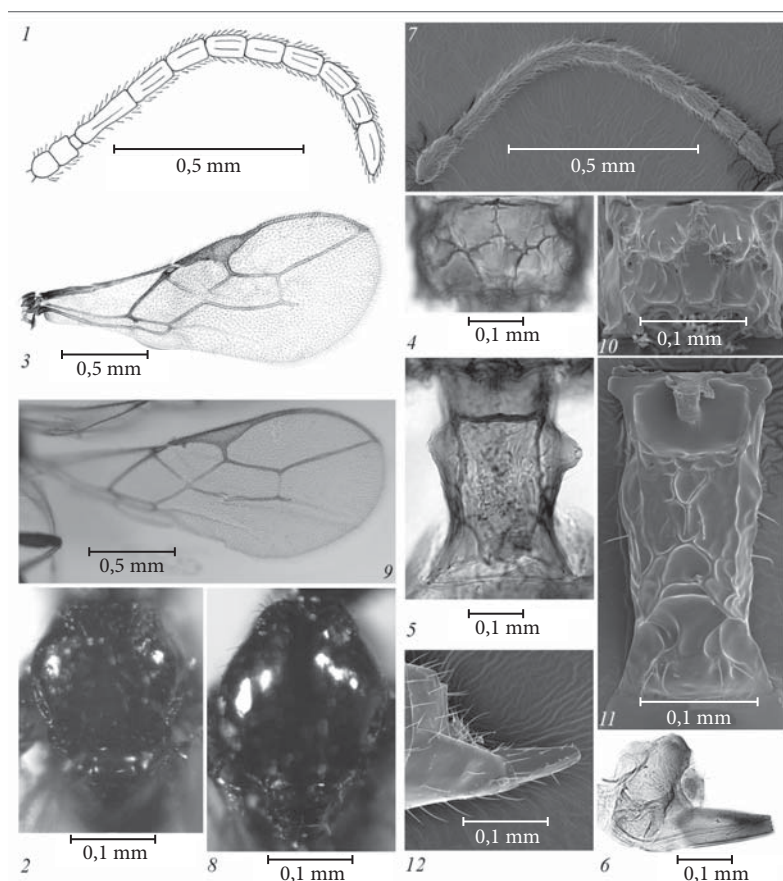


Fig. 5. *Ephedrus cerasicola*, ♀ (1–6), *E. plagiator*, ♀ (7, 10–12), *E. niger*, ♀ (8, 9): 1, 7 — antenna; 2, 8 — mesoscutum; 3, 9 — forewing; 4, 10 — propodeum; 5, 11 — petiole; 6, 12 — ovipositor sheath.

Рис. 5. *Ephedrus cerasicola*, ♀ (1–6), *E. plagiator*, ♀ (7, 10–12), *E. niger*, ♀ (8, 9): 1, 7 — усик; 2, 8 — средне-спинка; 3, 9 — переднее крыло; 4, 10 — проподеум; 5, 11 — стебелёк; 6, 12 — створки яйцеклада.

2) F1 is yellow, without or with 1 longitudinal placode; 3) shorter 2nd submarginal cell of forewing; 4) wider central areola on propodeum; 5) shorter petiole with more prominent spiracular tubercles; 5) shorter ovipositor sheath with straighter margin of apex. *E. cerasicola* forewing veins (RS+M)a and 2RS are partly desclerotized in the place they join (fig. 5, 3, 9).

Hosts. Species of genera *Brachycaudus*, *Capitophorus*, *Cryptomyzus*, *Dysaphis*, *Hyperomyzus*, *Myzus*, *Nasonovia*, *Ovatus*, *Phorodon*, *Rhopalosiphum* (Starý, 1962; Gärdenfors, 1986; Tobias, Chiriac, 1986; Starý, 2006; Starý, Lukáš, 2009; Tomanović et al., 2009; Yu et al., 2012).

Habitats. Gardens, parks, orchards, vineyards, roadsides (Starý, 2006; Starý, Lukáš, 2009).

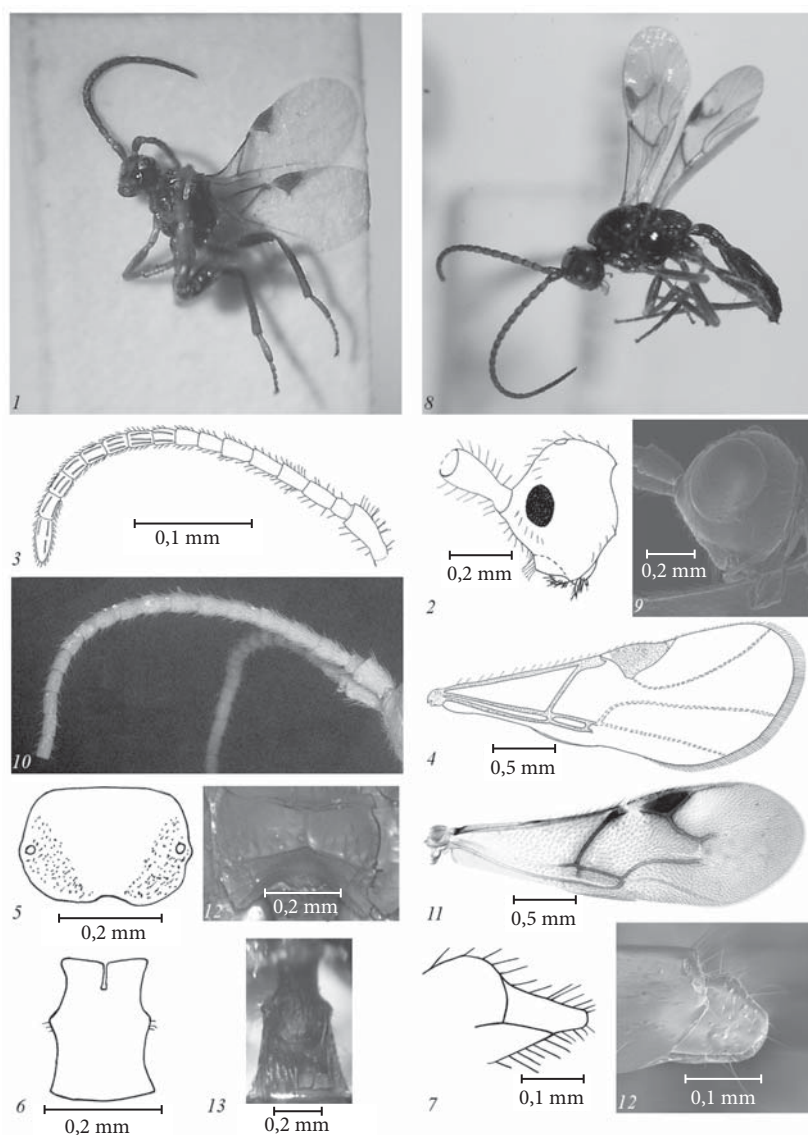


Fig. 6. *Paralipsis enervis*, ♀ (1–7) and *Protaphidius wissmannii*, ♀ (9–12, 14), ♂ (8, 13): 1, 8 — habitus; 2, 9 — head, lateral aspect; 3, 10 — antenna; 4, 11 — forewing; 5, 12 — propodeum; 6, 13 — petiole; 7, 14 — ovipositor sheath.

Рис. 6. *Paralipsis enervis*, ♀ (1–7) и *Protaphidius wissmannii*, ♀ (9–12, 14), ♂ (8, 13): 1, 8 — габитус; 2, 9 — голова, вид сбоку; 3, 10 — усик; 4, 11 — переднее крыло; 5, 12 — пропodeум; 6, 13 — стебелёк; 7, 14 — створки яйцеклада.

Distribution. Ukraine (Kyiv Region, first records). Europe; Middle Ural; Near East (Turkey, Iran); Southern (Pakistan), and South-Eastern Asia (New Zealand); North America (U.S.A.) (Tobias, Chiriac, 1986, Yu et al., 2012).

***Paralipsis enervis* (Nees, 1834)**

Material. 1 ♀, Kyiv, Muromets Island [50°30'53.36" N, 30°32'44.97" E], oaks, 31.05.2012 (S. Simutnik) (SIZK).

Comment. The only species of the genus *Paralipsis* in the Palearctic Region (Yu et al., 2012).

Comparative notes. *P. enervis* (fig. 6, 1–7) may be confused in habitus with *Protophidius wissmannii* Ratzeburg (fig. 6, 8–14) (particularly with males): both species share long and apically dilated scapus, filiform near to moniliform antenna, strongly sclerotized stigma, heavyset body, oval apex of the abdomen (*Pr. wissmannii* males), *P. enervis* differs from *Pr. wissmannii* by: 1) smaller eyes; 2) very long scapus, that is notably longer than F1; 3) antenna with only 15–16 segments; 4) another type of forewing venation: no central cell and almost no metacarpus, radial vein is very short, and looks like a point; 5) propodeum without areolae or carinae; 6) short petiole; 7) abdomen with normally developed tergites; 8) ovipositor sheath thinned to the apex.

Hosts. *Anoecia corni*, *Anoecia* sp.; *Anuraphis catonii*, *A. farfarae*, *A. subterranea*; *Aphis lambersi*, *A. roepkei*, *A. sambuci*; *Brachycaudus ballotae*, *B. cardui*, *B. mordvilkoii*, *Brachycaudus* sp.; *Chromaphis*; *Dysaphis crataegi*, *D. lappae*, *D. pyri*; *Forda formicaria*, *F. marginata*; *Geoica utricularia*; *Tetraneura ulmi* (Tobias, Chiriac, 1986; Starý, 2006; Davidian, 2007; Starý, Lukáš, 2009; Yu et al., 2012).

Habitats. Steppe, field verge, ruderal and waste places, meadows, parks, botanical gardens, gravel-pit (Starý, 2006; Starý, Lukáš, 2009). Myrmecophilous species, that may occur in ants (genus *Lasius*) nests (Starý, 1958).

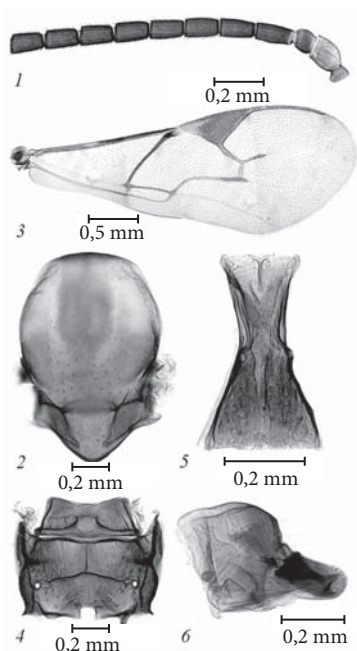


Fig. 7. *Pauesia abietis*, ♀: 1 — antenna; 2 — mesonotum; 3 — forewing; 4 — propodeum; 5 — petiole; 6 — ovipositor sheath.

Рис. 7. *Pauesia abietis*, ♀: 1 — усик; 2 — среднеспинка; 3 — переднее крыло; 4 — проподеум; 5 — стebelёк; 6 — створки яйцеклада.

Distribution. Ukraine (Kyiv Region, first record). Europe; Middle Ural; Near East (Georgia); Central Asia (Kazakhstan) (Yu et al., 2012; Starý, 1958; Tobias, Chiriac, 1986).

***Pauesia abietis* (Marshall, 1896)**

Material. 1 ♀, Kyiv: Sviatoshyn [50°27'24.94" N, 30°22'6.15" E], in apartment, in the lamp, 29.11.2010 (Petrenko) (SIZK); 1 ♀, Cherkasy Region: Kaniv, Kryve Lake [49°45'30.20" N, 31°31'1.22" E], 17.07.1972, reared from *Cinara pinea* (Mordvilko) 19.07.1972 (Ichanskaya) (ZISP); 1 ♀, Crimea: Nikitsky Botanical Garden [44°30'37.79" N, 34°13'51.39" E], 18.06.1972, reared from *Cinara schimitscheki* Börner 25.06.1972 (Ichanskaya) (ZISP); 2 ♀, Crimea: Nikitsky Botanical Garden [44°30'37.79" N, 34°13'51.39" E], 19.06.1972, reared from *Cinara schimitscheki* Börner 21.06.1972 (Ichanskaya); 1 ♀, Crimea: Yalta, mountains [44°30'13.03" N, 34°8'29.50" E], 22.06.1972, reared from *Cinara brauni* Börner 29.06.1972 (Ichanskaya) (ZISP).

Comparative notes. *P. abietis* (fig. 7) is similar to *P. pini* Haliday (Davidian, 2007) and differs by: 1) shorter temple (near 1/3 length of the eye); 2) coloration of mesoscutum (yellowish with 3 brown spots on its lobes); 3) stigma 1.3–1.5 times as long as metacarpus; 4) narrower and less deep areola of propodeum; 5) wider petiole (2.5–3.0 times as long as wide at spiracles level); 6) wider ovipositor sheath, almost not thinned at apex.

Hosts. The main hosts are species of *Cinara* genus on *Larix* and *Pinus*: *C. bogdanovi*, *C. cuneomaculata*, *C. laricis*, *C. maritimae*, *C. pilicornis*. *C. pinea*, *C. piniformosana*, *C. pruinosa*, *C. pubicornis*, *C. piniformosana*, *Cinara* sp. (Tobias, Chiriac, 1986; Starý, 2006; Davidian, 2007; Yu et al., 2012). There are data on *P. abietis* parasitizing on *Schizolachnus pineti* and *Aphis craccivora*, but this information was not confirmed in latter publications (Yu et al., 2012).

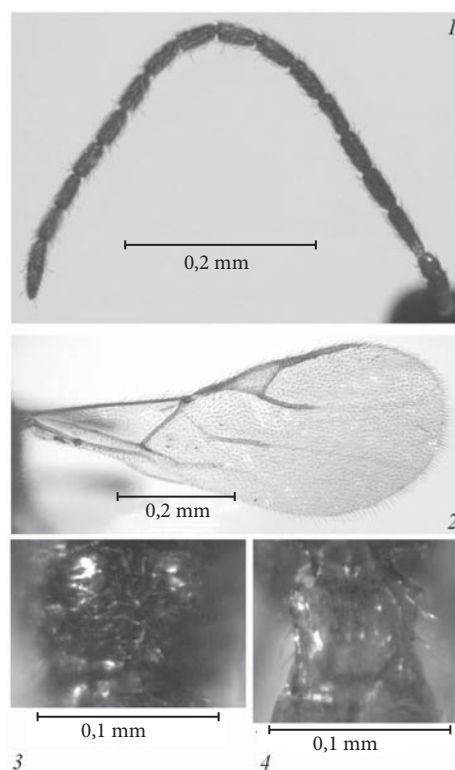


Fig. 8. *Praon necans*, ♂: 1 — antenna; 2 — forewing; 3 — propodeum; 4 — petiole.

Рис. 8. *Praon necans*, ♂: 1 — усик; 2 — переднее крыло; 3 — пропodeум; 4 — стебелёк.

Habitats. Coniferous forests, mixed forests, forests edges (Starý, 2006).

Distribution. Ukraine (Kyiv and Cherkasy Regions, first records), Crimea. Europe; Siberia (Russia: Irkutsk Oblast, Buryatskaya Respublika, Tuvinskaya Respublika); Eastern Asia (Russia: Primorskiy Kray; China; Northern and Southern Korea; Japan); Eastern Africa (Kenya) (Yu et al., 2012; Davidian, 2007; Tobias, Chiriach, 1986).

***Pauesia longicauda* Chiriach, 1993**

Material. 1 ♀, Kyiv Region, Boyarka [50°18'56.55" N, 30°17'27.19" E], 8.06.1972, reared from *Cinara pinea* (Mordvilko) 12.06.1972 (Ichanskaya) (ZIN).

Comment. There is lack of data about this species. The only information on *P. longicauda* is in the article of I. Chiriach (1993).

Comparative notes. In the shape of ovipositor sheath and number of antennal segments *P. longicauda* is very similar to Japanese species *P. akamatsucola* Takada, 1968, from which it differs by the propodeum with lateral longitudinal carinae, and temples (dorsally) slightly longer than 0.5 of eye length (Chiriach, 1993). Among species of Ukrainian fauna *P. longicauda* is similar to *P. laricis* (Haliday) differing by: 1) mesoscutum that vertically arises above pronotum; 2) petiole 4 times as long as wide at spiracles level; 3) longer and thinner ovipositor sheath.

Hosts. *Cinara pinea*.

Habitats. Coniferous and deciduous forests.

Distribution. Ukraine (Kyiv Region, first record). Moldova (Chiriach, 1993).

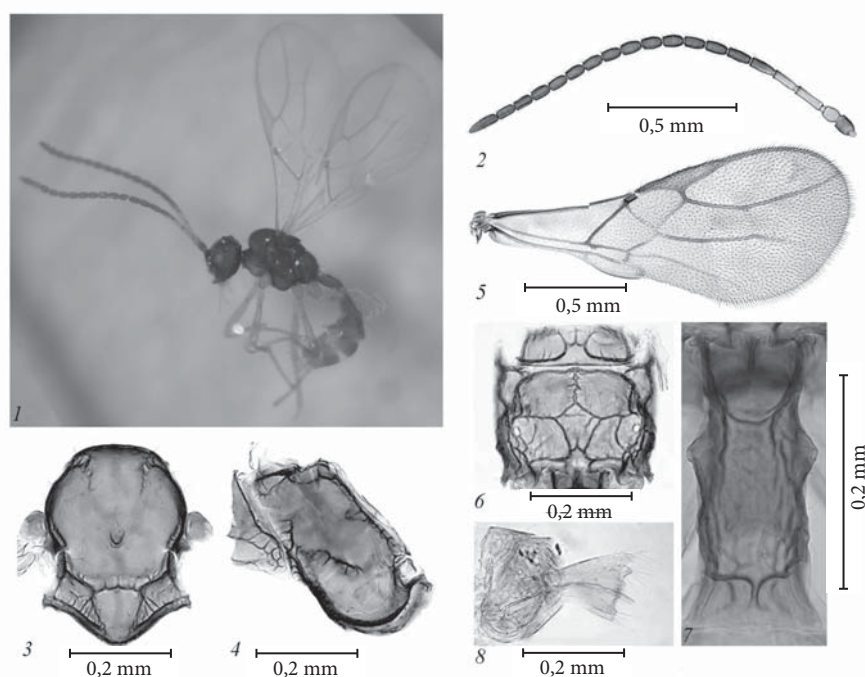


Fig. 9. *Toxares deltiger*, ♀: 1 — habitus; 2 — antenna; 3 — mesonotum; 4 — mesopleuron; 5 — forewing; 6 — propodeum; 7 — petiole; 8 — ovipositor sheath.

Рис. 9. *Toxares deltiger*, ♀: 1 — габитус; 2 — усик; 3 — среднеспинка; 4 — мезоплевра; 5 — переднее крыло; 6 — пропodeум; 7 — стeбелёк; 8 — створки яйцеклада.

***Praon necans* Mackauer, 1959**

Material. 1 ♂, Kyiv Region: Kruglyk [50°18'28.90" N, 30°25'50.77" E], sweeping on steppe hills, 22.08.1980 (A. Kotenko) (SIZK); 1 ♂, Cherkasy Region: Kaniv Nature Reserve [49°43'11.75" N, 31°32'31.56" E], along Dniper riverside, *Amorpha*, *Robinia*, pine, poplar, 1.07.2004 (S. Simutnik) (SIZK); 1 ♂, near Kaniv [49°43'36.99" N, 31°31'45.74" E], right riverside of Dniper river, 20–27.07.1966 (Kasparian) (ZISP).

Comparative notes. *P. necans* (fig. 8) morphologically is very close to *P. gallicum* Starý, 1971, and differs by brown color of F1 and F2, and presence of 1 longitudinal placode on F2 (Kavallieratos et al., 2005). Among species of Ukrainian fauna *P. necans* is similar to *P. exoletum* Nees, and differs by: 1) antenna with 15–16 segments; 2) forewing m-cu vein completely absent; 3) almost square petiole; 4) clearly concave dorsal margin of ovipositor sheath (Kavallieratos et al., 2005).

Hosts. *Rhopalosiphoninus calthae* on *Caltha palustris*; *Rhopalosiphum insertum*; *R. nymphaeae* on *Alisma plantago-aquatica*, *Batrachium aquatile*, *Caltha palustris*, *Echinodorus ranunculoides*, *Eichhornia crassipes*, *Hysrocharis morsus-ranae*, *Lemna* sp., *Menyanthes trifoliata*, *Nuphar* sp., *Nymphaea alba*, *N. odorata*, *Nymphaea* sp., *Ranunculus aquatilis*, *R. flammula*, *R. lingua*, *Sagittaria* sp., *Typha angustifolia*, *Utricularia* sp.;

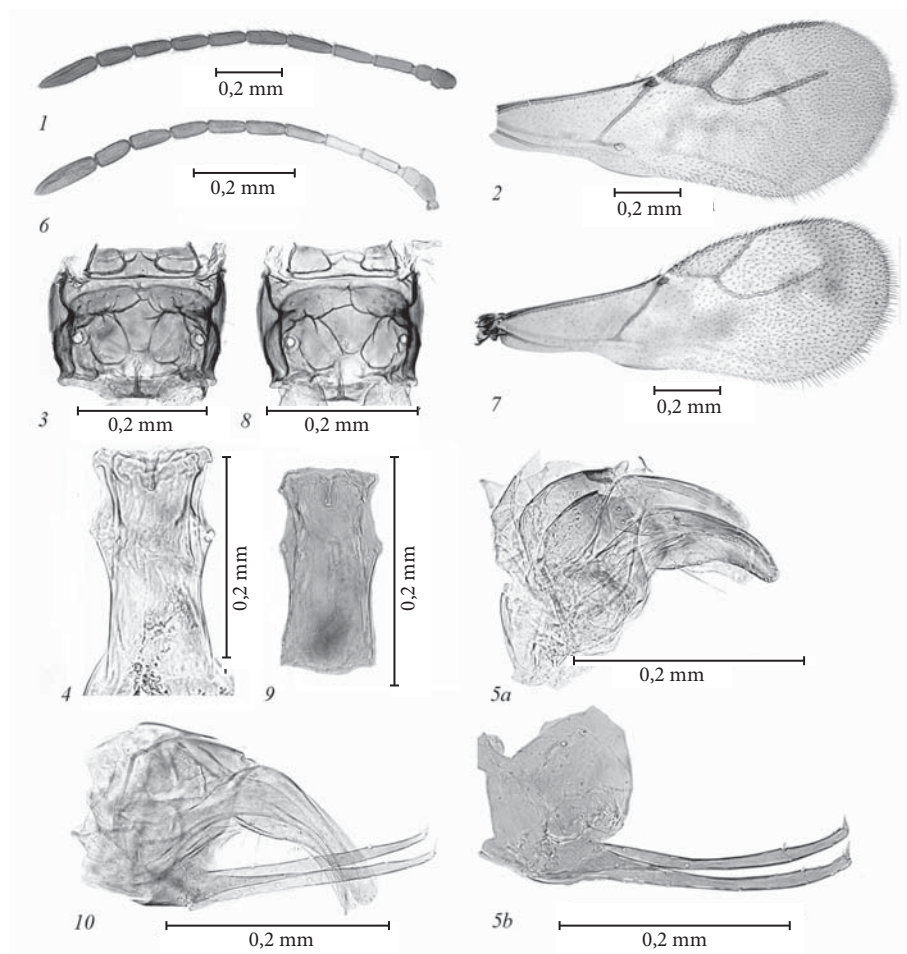


Fig. 10. *Trioxys curvicaudus*, ♀ (1–5) and *Trioxys pallidus*, ♀ (6–10): 1, 6 — antenna; 2, 7 — forewing; 3, 8 — propodeum; 4, 9 — petiole; 5 a, 5 b, 10 — ovipositor sheath and prongs.

Рис. 10. *Trioxys curvicaudus*, ♀ (1–5) и *Trioxys pallidus*, ♀ (6–10): 1, 6 — усик; 2, 7 — переднее крыло; 3, 8 — пропodeум; 4, 9 — стебелёк; 5 a, 5 b, 10 — створки яйцеклада и пронги.

R. padi; *R. rufulum* on *Acorus calamus*; *Schizaphis* sp. on *Typha angustifolia* (Mackauer, 1959; Tobias, Chiriac, 1986; Starý, 2006; Davidian, 2007; Yu et al., 2012).

Habitats. Wetlands, riversides, parks, botanical gardens (Starý, 2006).

Distribution. Ukraine (Kyiv Region, Cherkasy Region, first records). Europe; Siberia (Russia: Novosibirsk Oblast); Near East (Iraq), Central Asia (Kazakhstan); Eastern Asia (China), Southern Asia (Pakistan, India); Northern Africa (Egypt) (Yu et al., 2012; Tobias, Chiriac, 1986).

Toxares deltiger (Haliday, 1833)

Material. 1 ♂, 1 ♀, Ternopil Region: Gusiatsyn Distr., "Medobory" Nature Reserve [49°11'15.34" N, 26°10'56.89" E], Gorodnytsia forestry, right riverside of Zbruch River, meadow, 27.05.1994 (Tolkanits) (SIZK).

Comment. Only one species of genus *Toxares* is recorded in Europe (Yu et al., 2012).

Comparative notes. *T. deltiger* (fig. 9) is very similar to species of genus *Ephedrus* (fig. 5). The main difference is deltoid form of ovipositor sheath: the base is narrow and the apex is wide and trifid (fig. 9, 8). In addition: 1) 2nd submarginal cell of *T. deltiger* forewing is rather long (fig. 9, 5); 2) mesoscutal fovea (also present in some *Ephedrus* species) is very distinct (fig. 9, 3); 3) there are crenulated lateral sutures on mesopleurae (fig. 9, 4), that are absent in *Ephedrus* species; 4) *T. deltiger* has asterial (not rounded) excision on posterior margin of propodeum (fig. 9, 6).

Hosts. Species of genera *Acyrtosiphon*, *Amphorophora*, *Aphis*, *Betacallis*, *Brachycaudus*, *Capitophorus*, *Cryptomyzus*, *Drepanosiphum*, *Dysaphis*, *Eumyzus*, *Hyperomyzus*, *Impatientinum*, *Lachnus*, *Macrosiphoniella*, *Macrosiphum*, *Metopolophium*, *Myzus*, *Neocyrtosiphon*, *Ovatus*, *Prociphilus*, *Rhopalosiphum*, *Schizaphis*, *Sitobion* (Powell, 1980; Starý, 2006; Davidian, 2007; Yu et al., 2012)

Habitats. Forests, forest-steppe, wheat fields, riversides, parks, ruderal places (Starý, 1958; Powell, 1980).

Distribution. Ukraine (Ternopol Region, first record). Europe; Near East (Turkey); Far East (Russia: Primorskiy Kray); Southern Asia (Pakistan, India); North America (U.S.A.) (Powell, 1980; Davidian, 2007; Yu et al., 2012).

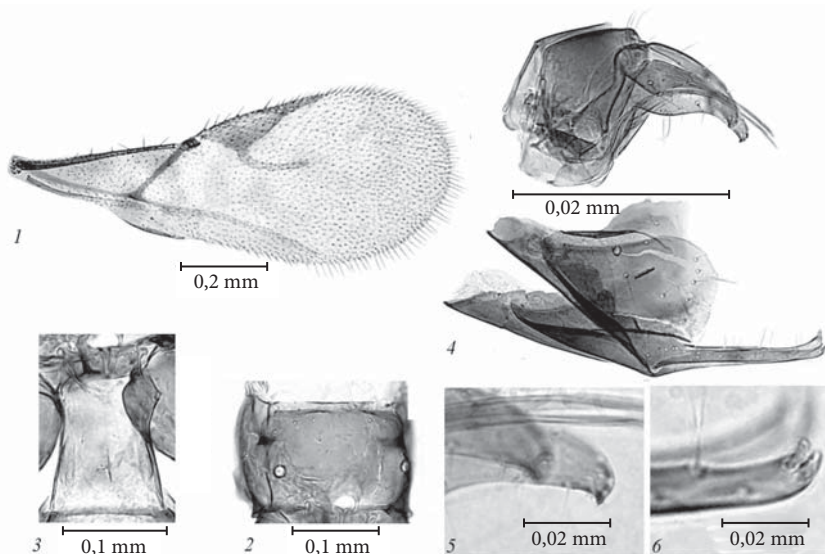


Fig 11. *Trioxys tanaceticola*, ♀: 1 — forewing; 2 — propodeum; 3 — petiole; 4 — ovipositor sheath and prongs; 5 — apex of ovipositor sheath; 6 — apex of prong with clawlike bristles.

Рис. 11. *Trioxys tanaceticola*, ♀: 1 — переднее крыло; 2 — проподеум; 3 — стебелёк; 4 — створки яйцеклада и пронги; 5 — вершина створок яйцеклада; 6 — вершина пронг с коготковидными щетинками.

***Trioxys curvicaudus* Mackauer, 1967**

Material. 1 ♀, Kyiv: Osokorky [50°23'8.23" N, 30°35'36.01" E], near Dniper river, on *Aeculus hippocastaneum*, 23.04.2004 (Sviridov) (SIZK).

Comparative notes. *T. curvicaudus* (fig. 10, 1–5) is very similar to *T. pallidus* (Haliday) (fig 10, 6–10), and differs by: 1) stigma is 2.5 as long as wide; 2) narrower central areola on propodeum; 3) short ovipositor sheath with basal part longer or almost equal to apical part; 4) prongs are slightly curved upward in their distal part, with 2 setae on dorsal side.

Hosts. *Eucallipterus tiliae* on *Tilia cordata*, *T. tomentosa*, *Tilia* sp.; *Hoplocallis picta* on *Quercus ilex*; *Mesocallis sawashibae* on *Quercus* sp.; *Myzocallis carpini* on *Carpinus* sp., *M. coryli* on *Corylus avellana*, *M. komareki* on *Quercus coccifera*, *M. walshii* on *Quercus rubra*; *Tinocallis platani* on *Ulmus* sp., *T. zelkowae* on *Quercus* sp.; *Tuberculatus annulatus*, *Tuberculatus* sp. on *Quercus* sp.; *Tuberculoides* sp. on *Quercus* sp. (Tobias, Chiriac, 1986; Starý, 2006; Davidian, 2007; Starý, Lukáš, 2009; Yu et al., 2012).

Habitats. Deciduous forest, parks, roadsides (Starý, 2006; Starý, Lukáš, 2009).

Distribution. Ukraine (Kyiv Region, first record). Europe; Eastern Asia (South Korea); North America (U.S.A.) (Yu et al., 2012).

***Trioxys tanaceticola* Starý, 1971**

Material. 1 ♀, Kirovograd Region: Novomirgorod Distr., Yosypivka [48°50'59.11" N, 31°42'6.29" E], meadow, reared from aphids on *Tanacetum vulgare* L., 12.07.2011 (Zubenko) (SIZK).

Comparative notes. *T. tanaceticola* (fig. 11) is similar to European species *Trioxys lambersi* Mackauer, 1960 (Davidian, 2007), and differs by: 1) 11-segmented antenna; 2) more prominent spiracular tubercles; 3) apical part of ovipositor sheath is shorter; 4) clawlike bristles on prongs apexes is shorter. Moreover, it should be noted, that apex of ovipositor sheath of *T. tanaceticola* bearing three conical spines (fig. 11, 5); this diagnostic character could be helpful in *T. tanaceticola* identification.

Hosts. *Metopeurum fuscoviride* on *Tanacetum vulgare*; *Coloradoa heinzei* on *Artemisia* sp. and *A. absinthium* (Davidian, 2007; Yu et al., 2012).

Habitats. Meadows.

Distribution. Ukraine (Kirovograd Region, first record). Europe (France), Near East (Iran), Central Asia (Kazakhstan) (Yu et al., 2012; Davidian, 2007).

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